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Claims:

1. Seed of alfalfa plant designated J-101 and having representative seed deposited with American Type Culture Collection (ATCC) with Accession No. PTA-4814.
- 5 2. The alfalfa plant J-101 or parts thereof produced by growing the seed of claim 1.
3. The alfalfa plant J-101 or parts thereof of claim 2, comprising pollen, ovule, flowers, shoots, roots, or leaves.
4. The alfalfa plant J-101 of claim 2 further comprising progeny thereof.
5. The alfalfa plant J-101 of claim 4, wherein the genome of said alfalfa plant J-101
10 comprises a DNA molecule selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, and SEQ ID NO:4.
6. The alfalfa plant J-101 or seed or parts thereof of claim 4, the genome of which produces an amplicon comprising SEQ ID NO:1 or SEQ ID NO:2 in a DNA amplification method.
- 15 7. An isolated DNA polynucleotide primer molecule comprising at least 11 contiguous nucleotides of SEQ ID NO:3, or its complement that is useful in a DNA amplification method to produce an amplicon comprising SEQ ID NO:1.
8. An isolated DNA polynucleotide primer molecule comprising at least 11 contiguous nucleotides of SEQ ID NO:4, or its complement that is useful in a DNA amplification
20 method to produce an amplicon comprising SEQ ID NO:2.
9. A DNA detection kit comprising at least one molecule of 11 or more contiguous nucleotides homologous or complementary to SEQ ID NO:3 or SEQ ID NO:4, that when used in a DNA amplification methods produces an amplicon comprising SEQ ID NO:1 or SEQ ID NO:2.
- 25 10. A method of producing a plant that tolerates application of glyphosate herbicide comprising:
 - (a) sexually crossing a first glyphosate tolerant alfalfa event J-101 and a second parent plant that lacks the tolerance to glyphosate herbicide, thereby producing a plurality of first progeny plants; and
 - 30 (b) selecting a first progeny plant that is tolerant to application of glyphosate; and

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(c) selfing said first progeny plant, thereby producing a plurality of second progeny plants; and

(d) selecting from said second progeny plants a glyphosate tolerant plant.

11. A method of detecting the presence of DNA corresponding to the alfalfa plant J-101
5 DNA in a sample, the method comprising:

(a) contacting the sample comprising DNA with a primer pair, which when used in a nucleic acid amplification reaction with genomic DNA from alfalfa plant J-101, produces an amplicon comprising SEQ ID NO:1 or SEQ ID NO:2; and

(b) performing a nucleic acid amplification reaction, thereby producing the amplicon;
10 and

(c) detecting the amplicon.

12. A method of detecting the presence of a DNA corresponding to alfalfa J-101 in a sample, the method comprising:

(a) contacting the sample comprising DNA with a probe that hybridizes under stringent
15 hybridization conditions with genomic DNA from alfalfa J-101 and does not hybridize under the stringent hybridization conditions with a control alfalfa plant, wherein said probe is homologous or complementary to SEQ ID NO:1 or SEQ ID NO:2; and

(b) subjecting the sample and probe to stringent hybridization conditions; and detecting hybridization of the probe to the DNA.

13. An alfalfa plant comprising a glyphosate tolerant trait that is genetically linked to a complement of a marker polynucleic acid, wherein said marker polynucleic acid molecule comprises SEQ ID NO:1 or SEQ ID NO:2.

14. Seed of alfalfa plant designated J-163 and having representative seed deposited with American Type Culture Collection (ATCC) with Accession No. PTA-4815.

15. The alfalfa plant J-163 or parts thereof produced by growing the seed of claim 18.

16. The alfalfa plant J-163 or parts thereof of claim 19, comprising pollen, ovule, flowers, shoots, roots, or leaves.

17. The alfalfa plant J-163 of claims 19 further comprising progeny thereof.

18. The alfalfa plant J-163 of claim 21, wherein the genome of said alfalfa plant J-163
30 comprises a DNA molecule selected from the group consisting of SEQ ID NO:5; SEQ ID NO:6, SEQ ID NO:7, and SEQ ID NO:8.

19. The alfalfa plant J-163 or seed or parts thereof of claim 21, the genome of which produces an amplicon comprising SEQ ID NO:5 or SEQ ID NO:6 in a DNA amplification method.
20. An isolated DNA polynucleotide primer molecule comprising at least 11 contiguous nucleotides of SEQ ID NO:7 or its complement that is useful in a DNA amplification method to produce an amplicon comprising SEQ ID NO:5.
21. An isolated DNA polynucleotide primer molecule comprising at least 11 contiguous nucleotides of SEQ ID NO:8, or its complement that is useful in a DNA amplification method to produce an amplicon comprising SEQ ID NO:6.
22. A DNA detection kit comprising at least one molecule of 11 or more contiguous nucleotides homologous or complementary to SEQ ID NO:7 or SEQ ID NO:8, that when used in a DNA amplification methods produces an amplicon comprising SEQ ID NO:5 or SEQ ID NO:6.
23. A method of producing a plant that tolerates application of glyphosate herbicide comprising:
- (a) sexually crossing a first glyphosate tolerant alfalfa event J-163 and a second parent plant that lacks the tolerance to glyphosate herbicide, thereby producing a plurality of first progeny plants; and
 - (b) selecting a first progeny plant that is tolerant to application of glyphosate; and
 - (c) selfing said first progeny plant, thereby producing a plurality of second progeny plants; and
 - (d) selecting from said second progeny plants a glyphosate tolerant plant.
24. A method of detecting the presence of DNA corresponding to the alfalfa event J-163 event in a sample, the method comprising:
- (a) contacting the sample comprising DNA with a primer pair, which when used in a nucleic acid amplification reaction with genomic DNA from alfalfa event J-163, produces a diagnostic amplicon comprising SEQ ID NO:5 or SEQ ID NO:6; and
 - (b) performing a nucleic acid amplification reaction, thereby producing the diagnostic amplicon; and
 - (c) detecting the diagnostic amplicon.

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25. A method of detecting the presence of a DNA corresponding to alfalfa event J-163 in a sample, the method comprising:

- (a) contacting the sample comprising DNA with a probe that hybridizes under stringent hybridization conditions with genomic DNA from alfalfa event J-163 and does not hybridize under the stringent hybridization conditions with a control alfalfa plant, wherein said probe is homologous or complementary to SEQ ID NO:5 or SEQ ID NO:6; and
- (b) subjecting the sample and probe to stringent hybridization conditions; and detecting hybridization of the probe to the DNA.

26. An alfalfa plant comprising a glyphosate tolerant trait that is genetically linked to a complement of a marker polynucleic acid, wherein said marker polynucleic acid molecule comprises SEQ ID NO:5 or SEQ ID NO:6.

27. An alfalfa plant or seed, the genome of which produces an amplicon comprising a DNA molecule selected from the group consisting of SEQ ID NO:1, 2, 5, and 6 when tested in a DNA amplification method.

28. The alfalfa plant or seed of claim 31, wherein its genome comprises a DNA molecule selected from the group consisting of SEQ ID NO:1-8.

29. An alfalfa plant transformed with the plant expression cassette of pMON20998.

30. An admixture of seed of alfalfa plants J-101 and J-163.

31. A field of plants grown from the mixture of seed of Claim 34.

32. A method of producing essentially weed-free alfalfa hay comprising the steps
- planting a field using seed consisting essentially of seed of Claim 6 or Claim 23 or any mixture of the two types;
 - applying to the resulting field of alfalfa plants one or more doses of glyphosate sufficient to kill weeds but which is tolerated by the alfalfa plants; and
 - harvesting one or more crops of alfalfa hay from said field.